

(A) a transition metal compound in which a number of a transition metal is the same as that of a group having a cyclopentadiene type anion skeleton,

(B) at least one aluminum compound selected from the following (B1) to (B3);

(B1) an organoaluminum compound represented by the general formula $E^1_a AlZ_{3-a}$,

(B2) a cyclic aluminoxane having a structure represented by the general formula $\{-Al(E^2)-O-\}_b$, and

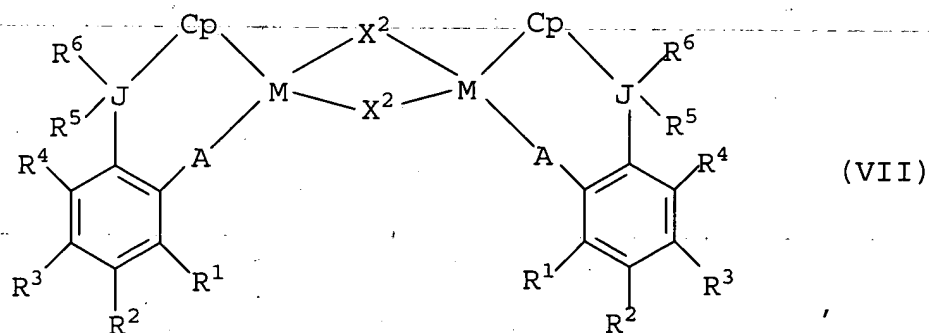
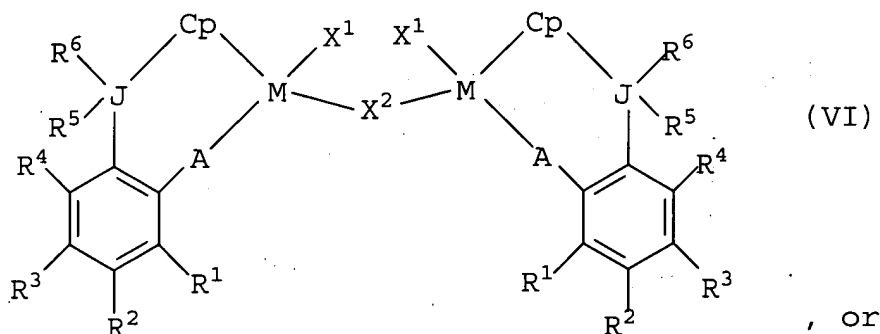
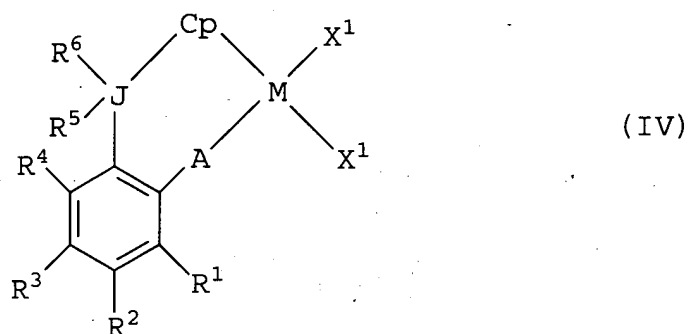
(B3) a linear aluminoxane having a structure represented by the general formula $E^3\{-Al(E^3)-O-\}_c AlE^3_2$,

wherein E^1 , E^2 and E^3 respectively represent a hydrocarbon group, all of E^1 , E^2 and E^3 may be the same or different, Z represents a hydrogen atom or a halogen atom, and all of Z may be the same or different, a represents a numeral satisfying $0 < a \leq 3$, b represents an integer of not less than 2, and c represents an integer of not less than 1; and

(C) a modified aluminumoxy compound obtained by reacting an aluminumoxy compound (C1) with a boron compound (C2) represented by the general formula $BQ^1Q^2Q^3$ at a temperature of from 50°C to 150°C, wherein B is a boron atom in the trivalent valence state; and Q^1 , Q^2 and Q^3 are respectively a halogen atom, a hydrocarbon group, a halogenated hydrocarbon group, a substituted silyl group, an alkoxy

group or a di-substituted amino group, and they may be the same or different.

8. (Amended) The olefin polymerization catalyst according to claim 1, wherein (A) is a transition metal compound selected from the group consisting of transition compounds represented by the general formulas (V), (VI) or (VII);



wherein, in the general formula (V), (VI) or (VII), M represents a transition metal atom of the Group IV of the Periodic Table of the Elements; A represents an atom of the Group XVI of the Periodic Table of the Elements; J represents an atom of the Group XIV of the Periodic Table of the Elements; Cp represents a group having a cyclopentadiene type anion skeleton; each of X^1 , R^1 , R^2 , R^3 , R^4 , R^5 and R^6 independently represents a hydrogen atom, a halogen atom, an alkyl group, an aralkyl group, an aryl group, a substituted silyl group, an alkoxy group, an aralkyloxy group, an aryloxy group, a di-substituted amino group, an alkylthio group, an aralkylthio group, an arylthio group, an alkylseleno group, an aralkylseleno group or arylseleno group; X^2 represents an atom of Group XVI of the Periodic Table of the Elements; R^1 , R^2 , R^3 , R^4 , R^5 and R^6 may be optionally combined with each other to form a ring; and in the general formula (II) or (III), two of M, A, J, Cp, X^1 , X^2 , X^3 , R^1 , R^2 , R^3 , R^4 , R^5 and R^6 may be respectively the same or different.
